

AFRL/MLBT Paints and Coatings Research Group

This poster discusses a variety of ongoing research programs to address field and depot paint issues.

Non-Chrome Primers

Hexavalent chrome, which is toxic and a carcinogen, is used extensively in DoD primers to provide corrosion protection. A number of non-chromated primers have been independently developed over the past several years. In-house research efforts have focused primarily on evaluation of promising technologies.

Advanced Topcoats

Currently the dry to fly time for topcoats is 72 hours. We have been developing and evaluating approaches to reduce the cure time for APC topcoats. These efforts have focused on field repair applications but may have utility in the depot.

Surface Cleaning & Treatments

Surface preparation is an important step in a paint system to prepare the substrate's native oxide for increased adhesion and corrosion protection. Currently used cleaners/deoxidizers can result in a surface that is more prone corrosion. We have evaluated cleaner/deoxidizer products and procedures. An SBIR effort is underway to develop improved cleaners and deoxidizers.

SNAP, Boegel, and Prekote coatings are potential chromated conversion coating (CCC) replacements. We have developed the SNAP coating in-house and are evaluating other surface pretreatments to ensure adequate corrosion both alone and when incorporated into full coating systems.

Multifunctional Coatings

SBIR effort to develop new topcoats that integrate the corrosion protection of the primer into single coating layer. One SBIR contract is pursuing a low-risk modification of an existing topcoat formulation while the other is using a UV cure approach to generate a VOC and HAP free coating.

High-Temperature Coatings

SBIR effort to develop coatings that can survive in high-temperature areas such as engine cowlings and slats.

Erosion Resistant Coatings

SBIR effort to develop new higher-performance erosion resistant coatings for leading edges and radomes.

Fuel Tank Coatings

The integral fuel tank coatings used on the B-52 and KC-135 aircraft are peeling due to the diethylene glycol monomethyl ether (DIEGME) present in the JP-8 fuel as a fuel system icing inhibitor. The project is a team effort with both industry and AFRL to develop and qualify new DIEGME resistant integral fuel tank coatings.

